IN THE CLAIMS

The following is a listing of pending claims:

1. (original) A method for determining a location of an object within an area of interest, comprising:

transmitting an RF signal from the object to at least three receivers;

transmitting a signal from at least one beacon transmitter to the at least three receivers, said at least one beacon transmitter being at a known location;

calculating, at each of the at least three receivers, time difference of arrival information based on the signal from said at least one beacon transmitter and the RF signal transmitted from the object; and

determining a location of the object within said area of interest based on said time difference of arrival information.

2. (previously presented) The method of claim 1, wherein said RF signal comprises a ultra-wideband signal.

3. (previously presented) The method of claim 2, wherein said ultra-wideband signal comprises a transmitted-reference ultra-wideband signal.

4. (previously presented) The method of claim 1, wherein the step of determining a location of the object comprises using a maximum likelihood algorithm.

5. (original) The method of claim 1, further comprising:

transmitting signals from a plurality of beacon transmitters to the at least three receivers, said plurality of beacon transmitters each being at a known location, each of the beacon transmitters having an independent local clock;

calculating, at each of the at least three receivers, a plurality of time difference of arrival data based on respective signals from said plurality of beacon transmitters and the RF signal transmitted from the object; and

determining the location of the object within said area of interest based on said time difference of arrival data from said at least three receivers.

6. (previously presented) The method of claim 5, wherein the step of determining the location of the object comprises using a maximum likelihood algorithm.

7. (previously presented) The method of claim 2, wherein said ultra-wideband signal comprises a transmitted-reference, delayed hopped ultra-wideband signal; and wherein the step of transmitting a transmitted-reference, delayed hopped ultra-wideband signal comprises generating pairs of pulses separated by a time interval D and encoding by relative polarity of pulses of said pairs; and wherein the step of calculating time difference of arrival information comprises delaying received signals by the time interval D.

8. (previously presented) The method of claim 7, wherein the step of transmitting further comprises generating the pairs of pulses at a pulse repetition rate which is variable in order to shape a spectrum of transmission.

9. (previously presented) The method of claim 7, wherein transmitted-reference, delayed hopped ultra-wideband signals are transmitted from a plurality of objects, each transmitted-reference, delayed hopped ultra-wideband signal having a different time interval D between pulses of said pairs.

10. (previously presented) The method of claim 2, wherein the step of transmitting the ultra-wideband signal is performed by a transmitter carried by a patient, and wherein said area of interest is a medical facility.

11. (previously presented) The method of claim 9, wherein the step of transmitting the ultra-wideband signal further includes transmitting medical information of said patient with the ultra-wideband signal.

12. (previously presented) The method of claim 2, wherein the step of transmitting the ultra-wideband signal is performed by a transmitter attached to medical equipment, and wherein said area of interest is a medical facility.

13. (previously presented) A system for determining a location of an object within an area of interest, comprising:

a mobile device carried by said object, said mobile device including a transmitter for transmitting an RF signal;

at least one beacon transmitter at a known location for transmitting a beacon signal;

at least three base stations within said area of interest, each of said at least three base stations comprising a detector for detecting the RF signal transmitted from said mobile device, and further comprising a processor for deriving time difference of arrival information based on the beacon signal and the RF signal; and

a controller for determining the location of the object within said area of interest based on the time difference of arrival information calculated by each of the three base stations.

14. (previously presented) The system of claim 13, wherein the RF signal comprises a ultra-wideband signal.

15. (previously presented) The system of claim 14, wherein the ultra-wideband signal comprises a transmitted-reference ultra-wideband signal.

16. (previously presented) The system of claim 14, wherein said ultra-wideband signal comprises a transmitted-reference, delayed hopped ultra-wideband signal, and said detector comprises a pulse-pair correlator.

17. (previously presented) The system of claim 16, wherein said transmitter transmits said transmitted-reference, delayed hopped ultra-wideband signal having a variable pulse repetition time.

18. (previously presented) The system of claim 13, wherein

a plurality of mobile devices transmit RF signals to the at least three base stations, each of the three base stations comprising a plurality of detectors for detecting the RF signals and deriving time difference of arrival information based on the beacon signal and the RF signals, said controller determining locations of said objects based on said time difference of arrival information.

19. (original) The system of claim 13, wherein said object is a patient and said area of interest is a medical facility.

20. (original) The system of claim 13, wherein the transmitter of the mobile device transmits medical information of said patient with the RF signal.

21. (original) The system of claim 13, wherein said object is medical equipment and said area of interest is a medical facility.